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forming a plurality of individual solder ball leads, wherein two or more of said individual solder ball leads use differing types of solder having differing melting points.

REMARKS

Claims 88, 90-95, and 97-123 stand rejected in the application. In response, claim 122 has been cancelled, and claim 124 has been newly added. Support for claim 124 can be found at least on page 20. Thus, claims 88, 90-95, and 97-121, 123 and 124 remain pending in the application, with claim 88 being the sole independent claim. Applicants reserve the right to pursue the original claims and alter the claims in this application and in other applications.

Claims 88, 90-95, and 97-121, and 123 stand rejected under 35 U.S.C. 103 as being unpatentable over Stone (U.S.P.N. 5,770,476) in view of Yamazaki (U.S.P.N. 6,002,161). Claim 88 recites, inter alia, "providing an insulating layer on at least one surface of a silicon substrate; processing said insulating layer to produce at least one passive circuit element on or within said insulating layer, said at least one passive circuit element being separated from said silicon substrate by a portion of said insulating layer; and . . . bonding at least one integrated circuit chip to said interposer element . . .". None of the references applied by the Examiner teach these claimed steps.

Stone is directed to an insulator interposer for redirecting a conducting path between a die and a printed circuit board. Stone does not disclose an interposer having a

silicon substrate with an insulating layer on a surface of the silicon substrate, in combination with a passive element provided on or in the insulating layer with the passive element being separated from the insulating layer by at least a portion of the insulating layer.

The Office Action mailed April 1, 2002 concedes that Stone does not disclose these limitations. The Office Action argues that it would have been obvious to add the Yamazaki silicon substrate to the insulating layer of the Stone interposer. Although Yamazaki discloses a silicon layer as part of an integrated circuit die, it does not disclose forming an interposer, much less one having a silicon layer and an insulating layer, as claimed. Creating an interposer having an insulating layer and a silicon layer is advantageous because doing so allows for the integration of active and passive elements on the interposer with a compact structure. Specification, page 11, lines 16-18. Additionally, the claimed insulating layer forms an effective barrier between the passive elements in the interposer insulating layer and the silicon substrate. Specification, page 13, lines 3-5. Since neither Stone nor Yamazaki discloses or in manner suggests forming an interposer with an insulating layer in contact with a silicon substrate, and a passive device on or in the insulating layer and insulated from the silicon layer, claim 88 and all claims dependent therefrom are patentable over the applied references.

Moreover, Applicants note that there is no motivation in either the Stone or Yamazaki references to combine their teachings to form an interposer as claimed. Stone discloses an insulating interposer without a silicon layer and Yamazaki discloses a circuit die

having a silicon substrate. One skilled in the art would not be led to the claimed invention by these diverse teachings.

Additionally, claim 123 recites, *inter alia*, dividing a silicon substrate into separate areas, and bonding at least one integrated circuit chip to each of said areas. The Office Action mailed September 26, 2001 asserts that this feature is disclosed in Stone's column 1 (page 6, paragraph 6). This assertion is respectfully traversed. Stone's column 1 describes making changes to basic circuitry to accommodate design changes or to modify a package for use with different devices. However, Stone neither discloses nor suggests dividing a silicon substrate of an interposer into separate areas, and bonding at least one integrated circuit chip to each of said areas. For at least the above reasons, the rejection of claim 123 should be withdrawn.

Finally, claim 124 recites, *inter alia*, forming a plurality of individual solder ball leads, wherein two or more of said individual solder ball leads use differing types of solder having differing melting points. Such a step is not suggested by any of the applied prior art. For at least the above reasons, the rejection of claim 124 should be withdrawn.

As shown above, claims 88, 123, 124, and all claims dependent therefrom are now in condition for allowance and a notice to this effect is respectfully requested.

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Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

122. (Cancel without Disclaimer or Prejudice)

Please add the following new claims.

124. (Newly Added) The process according to claim 90, wherein said step of solder bonding further comprises:

forming a plurality of individual solder ball leads, wherein two or more of said individual solder ball leads use differing types of solder having differing melting points.